

REMARKS

Claims 63, 64, 66, 67, 69, 72, 73, 75, 76, 78-80, 87, 88, 91, 97, 98 and 100-108 are pending in the application. The Examiner has rejected Claims 63, 64, 66, 67, 69, 72, 73, 75, 76, 78-80, 87, 88, 91, 97, 98 and 100-108 under 35 U.S.C. §103(a) as being unpatentable over Applicants' Admitted prior art (Admitted prior art) in view of Meidan et al. (U.S. Patent 5,936,972). The Examiner has rejected Claims 64, 73, 102 and 105 under 35 U.S.C. §103(a) as being unpatentable over Applicants' Admitted prior art in view of Meidan et al. in further view of Erroz et al. (U.S. Patent 6,370,669).

On September 5, 2003, Applicants' representative, Michael J. Musella, Esq., conducted an Interview with the Examiner. The Examiner stated that the interview should result in at least the issuance of a new Office Action with new cited references, or allowance of the claims. With respect to the allowance of the claims, the Examiner stated that if the issues raised during the interview warrant a new search, and the new search does not produce new art, the Examiner would allow the claims. Also, the Examiner stated that if a new search does produce relevant art, that he would contact Applicant's representatives to discuss proposed claim amendments to overcome the art and place the claims in condition for allowance. As the U.S. Patent and Trademark Office file was not available to the Examiner, many of the issues were raised in only a cursory manner. The following are the issues raised, the agreement reached, and Applicants' position with respect to each issue.

First, even though the claims that recited the "super frame" have been cancelled from this application, the Examiner continued to proffer arguments that reject claims that contain the "super frame". The Examiner stated that he would review the Office Action and remove any objections related to claims reciting the super frame.

Second, the Examiner did not address the claim amendments filed in the March 4, 2003 Response. The Examiner stated that he will review the Office Action and the prior Response and if it is determined that the amendments were not addressed that he would conduct a new search on the amendments.

Third, regarding substantive errors, the Examiner stated in the Office Action that the Admitted Prior Art (APA) discloses a processor *for determining a number and size of sub frames which can be generated from one input data frame*. Applicants presented to the Examiner that this is incorrect. The APA merely states that the prior art system contains a processor; it does not disclose or suggest that the processor can determine the number and size of a sub-frame. When

presented with this error, the Examiner stated during the interview that a review of the claims and the APA would have to be conducted to determine if this error was made.

Fourth, Applicants presented that the distinct difference between the turbo code of the present invention versus a convolutional code as disclosed in Median et al. requires withdrawal of the rejections. The Examiner stated that processes related to turbo coding would be obvious in light of the teachings of convolutional coding. The Examiner did state that he would review the application in light of the fact that processes related to the turbo coding in the present invention might not be obvious over the convolutional coding of Median et al. The present application discloses a channel coding scheme and uses a turbo code, while the reference, Median et al., relates to a mobile communication system using a convolutional code. The system of Median et al. limits the scope of applicable data rate; on the contrary, the mobile communication system of the present application does not limit the scope of the data rate input into a turbo coder. The turbo code is characterized by higher performance as blocks of larger input data size (i.e. data rate) are processed, and so, the apparatus disclosed in the present application is only limited by the input data size (i.e. data rate) within a specific scope in consideration of a permissible delay and memory size of decoder, etc. In this regard, the above feature of the claims of the present application cannot be deduced from Median et al. that relates to a mobile communication system using a convolutional code.

Fifth, Applicants presented that segmenting frames as recited in the claims of the present application is not taught or disclosed by Median et al. The Examiner agreed to look further into this issue and would withdraw the reference if he agrees that Applicants' position is correct. In the Office Action, the Examiner alleged that an apparatus and method for recombining frame segmentation/concatenation of a transmitter and original input data frame of a receiver in the present invention can be easily embodied by Median et al. on the basis of Fig. 2, Abstract, col. 2 \ line 7 et seq., and col. 5 et seq. in the reference, Median et al. However, in the reference, Median et al., there is no disclosure regarding the feature of segmenting a frame (coding block segmentation) in a transmitter in consideration of an input data frame size as in the present invention. Regarding the element of a "message structure" recited in Median et al., which is repeatedly cited by the Examiner, the "message structure" is defining a block before input into a turbo encoder but it is not fixed and variable. As indicated by the Examiner, such a feature is also described in the preamble of the independent claims in the present application, "...a turbo encoder having input data frames of variable size..." In other words, the present invention relates

to an apparatus and method for dividing an input data frame (message structure) having variable size, but subject matter of the claims of the present application is to enhance performance of a turbo code, and divide frames and generate new coding blocks (sub frames) by means of specific method as recited in the claims. On the contrary, Median et al. fails to disclose the above feature. Moreover, in the claims of the present application a data frame is turbo encoded in a unit of sub frame, restructures sub frames as a message structure of a unit of concatenated original input frame at a channel interleaver, interleaves, and then transmits the interleaved signals. While, Meidan et al. performs channel coding and interleaving in a unit of original message structure, and then transmits the signals. Accordingly, the "message structure" of Meidan et al. is different from the "sub frame" of the present invention.

Sixth, Applicants presented that the channel interleaver of the present invention interleaves after concatenating the input data frames, which is not disclosed by the cited references. The Examiner agreed to further examine on the order of the processes as recited in the claim and as taught by the references. In Meidan et al., the phrase "type of interleaving" means "type of channel interleaving". That is, channel interleaving is positioned on a backward end of a channel coding (convolutional coding or turbo coding) and the channel interleaver is not related to an internal interleaver of the turbo encoder which interleaves sub frames after segmenting an input data frame. The internal interleaver of the turbo encoder is positioned in the turbo encoder. In addition, from the viewpoint of a channel interleaver, the channel interleaver of the present invention interleaves after concatenating an input data frame which is segmented in a unit of a sub frame and turbo encoded, and restructuring the concatenated data frame as an encoded data frame in a unit of an original input frame, while the interleaver of Meidan et al. performs channel interleaving of the message structure encoded at a channel encoder. Accordingly, the present invention is distinguishable from Meidan et al.

With respect to claims 64, 73 and 105, the term of "type of interleaving" of Median et al. (col. 5 line 15) relates to channel interleaving, and is irrelevant to the "internal interleaver" of a turbo encoder in claim 105 of the present application. Moreover, regarding claims 64 and 73 as stated above, a channel interleaver of the present invention interleaves after concatenating an input data frame which is segmented in a unit of a sub frame and turbo encoded, and restructuring the concatenated data frame as an encoded data frame in a unit in a unit of an original input frame, while the interleaver of Median et al. performs channel interleaving of the message structure encoded at a channel encoder. Accordingly, the present invention is

distinguishable from Meidan et al.

Finally, Applicants presented that Erroz et al. is an improper reference based on the filing dates of the Erroz et al. Provisional Applications. It was presented to the Examiner that the elements of Erroz that the Examiner was relying upon in his objections were not contained in the provisional applications of Erroz, but were only introduced in the non-provisional application. The Examiner stated that he would pull the provisional files of Erroz to determine the content thereof, and withdraw the rejections based on Erroz if it is determined that Applicants' position is correct.

Based on the foregoing, withdrawal of the rejections of the claims is respectfully requested.

Independent Claims 63, 72, 79, 87, 91 and 97 are believed to be in condition for allowance. Without conceding the patentability per se of dependent Claims 64, 66, 67, 69, 73, 75, 76, 78, 80, 88, 98 and 100-108, these are likewise believed to be allowable by virtue of their dependence on their respective amended independent claims.

Accordingly, all of the claims pending in the Application, namely, Claims 63, 64, 66, 67, 69, 72, 73, 75, 76, 78-80, 87, 88, 91, 97, 98 and 100-108, are believed to be in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicants' attorney at the number given below.

Respectfully submitted,



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